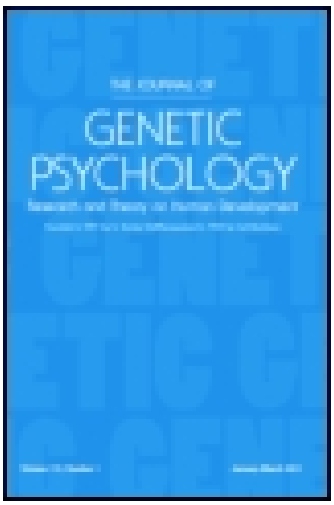
This article was downloaded by: [Deakin University Library]
On: 13 March 2015, At: 02:01
Publisher: Routledge
Informa Ltd Registered in England and Wales Registered Number: 1072954
Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



The Pedagogical Seminary and Journal of Genetic Psychology
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/vzpg20

The Role of Dominance in the Social and Sexual Behavior of Infra-Human Primates: III. A Theory of Sexual Behavior of Infra-Human Primates

A. H. Maslow [a]
[a] Teachers College, Columbia University , New York City , New York
Published online: 11 Sep 2012.

To cite this article: A. H. Maslow (1936) The Role of Dominance in the Social and Sexual Behavior of Infra-Human Primates: III. A Theory of Sexual Behavior of Infra-Human Primates, The Pedagogical Seminary and Journal of Genetic Psychology, 48:2, 310-338, DOI: 10.1080/08856559.1936.10533732

To link to this article: http://dx.doi.org/10.1080/08856559.1936.10533732

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

Terms & Conditions of access and use can be found at http://www.tandfonline.com/page/terms-and-conditions

Downloaded by [Deakin University Library] at 02:01 13 March 2015

THE RÔLE OF DOMINANCE IN THE SOCIAL AND SEXUAL BEHAVIOR OF INFRA-HUMAN PRIMATES: III. A THEORY OF SEXUAL BEHAVIOR OF INFRA-HUMAN PRIMATES* [1]

From the Division of Psychology, Institute of Educational Research, Teachers' College, Columbia University

A. H. MASLOW

The sexual behavior of monkeys seems to the casual observer to proceed on no fixed principles and to have no discernible order whatsoever. Every conceivable kind of sexual behavior may be observed, and even the biological sex differences seem at times to have no meaning, for males act like females and females like males. Even this behavior is not consistent, for the same monkey may act like a male with one animal and like a female with another, a few moments later. Aside from these considerations, their sexual behavior is astonishing for its frequency alone. It may be that this confusing profusion of sexual behavior, both in kind and amount, is responsible for the absolutely amazing neglect accorded to the problem of describing and explaining this aspect of the life of infra-human primates. This neglect is the more remarkable in view of the fact that such study offers another important approach to the problems of human sexuality.

It is the purpose of this paper (1) to give a skeleton description of the sexual behavior of these animals, (2) to offer evidence to show that this behavior is motivated by dominance drive[2] as well as by

* Recommended by Gardner Murphy, accepted for publication by Carl Murchison of the Editorial Board, and received in the Editorial Office, December 5, 1935.

[1] The writer wishes to express his thanks to Dr. Josephine Ball of the Carnegie Laboratory of Embryology for her criticisms and suggestions. Thanks are also due to Mr. Willard Helburn of Cambridge, Mass., for his suggestions and analogies with similar human behavior.

[2] The name "dominance drive" is given to the motivation factor that is assumed to be at the bottom of the high intercorrelation between the various parts of the dominance behavior syndrome. This, however, is only a deductive, theoretical concept used for the sake of economy of words. The writer is very anxious that this factor not be hypostatized or mannikinized. It might be better to give it a neutral designation like "D" rather than run the risk of making the "drive" into a little person behind the scenes. In any case let it be remembered that the writer has never seen, heard, or touched

Downloaded by [Deakin University Library] at 02:01 13 March 2015

sexual hormones and as a consequence to maintain that sexuality is as much social as physiological in these animals, and (3) to discuss some of the implications of this two-drive theory of sexual behavior in our consideration of the social and sexual lives of monkeys.

I. Historical

While there have been several excellent researches in the field of infra-human primate sexual behavior, these have been all too few. To counterbalance these, we have a profusion of anecdotal and theoretical papers by gentlemen-sportsmen, nature lovers, and the like. Many theory-intoxicated anthropologists have been bad offenders in this respect, but are now apparently being called to order by their fellow workers. [See also (21).] Too, the influence of convention has been so strong in some workers that it is not to be wondered at that this most delicate of all subjects should have suffered from the blight of taboo, which has acted to prevent much work that would have otherwise been done, and has also had a tendency to distort some of the work that has been done. With these few remarks we shall turn to a brief consideration of the excellent researches that are available. No attempt will be made, because of limitations of space, to discuss these thoroughly or to discuss *all* pertinent papers.

G. V. Hamilton (9), in 1914, broke ground with a very interesting series of researches growing out of a desire to test the Freudian hypotheses on these lower animals, particularly with respect to homosexuality and other "abnormal" behavior. The problems that he set himself were: (1) Are there types of infra-human primate behavior which cannot be regarded as expressions of a tendency to seek sexual satisfaction but which have the essential objective characteristics of sexual activity? (2) Do such sexual reaction-types as homosexual intercourse, efforts to copulate with non-primate animals, and masturbation normally occur among any of the primates, and, if so, what is their biological significance?

His answer to the first question, as a result of his fairly well-con-

---

a "dominance drive." He has seen and heard *only* certain behavior responses to certain social stimuli. These occur with a high degree of probability, and, further, are definitely correlated into a syndrome in any single animal. The writer does not wish his hypotheses to depend, for their acceptance or rejection, on any one theory of the "drive."

Downloaded by [Deakin University Library] at 02:01 13 March 2015

trolled experiments, is that there are "two and possibly three, different kinds of hunger that normally impel the macaque toward the manifestation of sexual behavior, viz., hunger for sexual satisfaction, hunger for escape from danger and possibly, hunger for access to an enemy."

With respect to his second problem he finds that,

> homosexual behavior is normally an expression of tendencies which come to expression even when opportunities for heterosexual intercourse are present. . . . Masturbation does not seem to occur under normal conditions. The macaque of both sexes is apt to display sexual excitement in the presence of friendly or harmless non-primates. It is possible that the homosexual behavior of young males is of the same biological significance as their mock combats. It is clearly of value as a defensive measure in both sexes. Homosexual alliances between mature and immature males may possess a defensive value for immature males, since it insures the assistance of an adult defender in the event of an attack.

Kempf (13), also influenced by psychoanalysis, studied carefully the social and sexual life of six rhesus macaques in order to obtain more insight into the phylogenetic determinants of man's social and sexual life. Generally he substantiated Hamilton's findings and enlarged on some of them. He believed with Hamilton that,

> in the infra-human primates as well as in the genus Homo, homosexual interests predominate and normally precede heterosexual interests until the adult stage is well established. Homosexual interests occur in both sexes but are more common in the male. . . . Submission as a homosexual object is implicated with biological inferiority in the infra-human primate. This is probably the root of man's conscious ineradicable recognition of homosexuality as a biological deficiency. . . . In the infra-human primate as in man, sexual submission is practiced to procure food (clothing), and protection.

Bingham (2) has contributed an excellent study of the sexual life of the chimpanzee, genetically considered. Since this is the first and almost the only such study, it will repay careful reading.[3] Generally

[3] See also recent studies of development of infra-human primate infants by Jacobsen, Jacobsen and Yoshioka (12) and Foley (6, 7) for incidental observations on sexual and dominance behavior.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

his conclusion is that hereditary equipment must be supplemented by individual experience in the chimpanzee before its sexual behavior may become functionally efficient. He reports also a good deal of variability in this behavior and establishes the fact of its occurrence in immature animals. Several other observations are of interest in connection with the purposes of this paper. For instance he describes a female in such a way that we may consider it to have been dominant to the other animals, and then points out that this female was never mounted by any of the others but that *it* mounted (in a sense) the other animals. The significance of this observation will be demonstrated below.

Yerkes' monumental atlas of anthropoid behavior (31) digests everything the literature has to offer on the study of the sexual life of the great apes. Interesting comparisons between these apes are available in this volume. Yerkes (29, 30) has also recorded the very interesting sexual behavior of a young female gorilla which he studied intensively. Köhler (14) has contributed some useful and interesting remarks and observations on the sexuality of his group of chimpanzees, to which the reader should also refer. Other studies to which some reference should be made, although limitations of space forbid any consideration of detail, are Montané (22, 23), Sokolowsky (25), Passemard (24), Fox (8), and Coolidge (5).

Zuckerman has contributed by far the most useful single study that we have available (32). It is in this book that the connection between dominance and sexuality is first pointed out clearly and discussed. Indeed it is the first clear and extended discussion of dominance behavior in general that we have. Since this work has been considered in other papers in this series we shall pass it by with this general notice.

Carpenter (4) has recently given us an unusually complete field study of the howler monkey (a platyrrhine). It is of particular interest to us because of the fact that this animal seems to display a different type of dominance behavior. Its sexual behavior in the group is very different in several important respects from the behavior of the baboon as described by Zuckerman (32). The general subject of the correlation between the howler type of dominance and its characteristic sexual behavior will be discussed more fully than would be possible here, in a future paper in this series [see also (15)].

Downloaded by [Deakin University Library] at 02:01 13 March 2015

Here we shall limit ourselves to pointing out that Carpenter reports no ownership of the female by the male, a relative lack of jealousy, nothing that looks like monogamous matings, but instead what may be very crudely described as polyandry. One female in heat may satiate two or three males. The details of the mounting behavior differ in no essential respect from the behavior we shall describe below.

II. The Description of Sexual Behavior

1. *Functional Sexual Behavior.* This behavior has been variously described, although never as adequately as Stone has described the similar behavior of the white rat (26). No attempt will be made here at this latter type of description. We intend rather to set up a crude norm from which we can measure our deviations. A descriptive statement may also be found in Kempf (13), although some exceptions must be taken to this description. The main point to be emphasized is the variability of this behavior from animal to animal and from species to species.

Functional copulation takes place typically in the adult pair when the female is in heat, although sexual behavior may be observed throughout the female cycle (32), and in the young and prepubescent animal [see Bingham (2)]. Individual and species differences are frequent. Common to all, however, are mounting (with a few exceptions), intromission, pelvic movements of the mounting male, receptive posture in the female (presentation), and ejaculation.

Mounting may be immediate and is not necessarily preceded by genital inspection, lip smacking, chattering, or vocalization as has been claimed by many who have worked with one particular species and have consistently observed some type of behavior preliminary to mounting. Yerkes (30) has also described tremors or shivering of the entire body during sexual excitement in a female gorilla. It is unwise, however, to generalize any preliminary behavior because in many cases it does not occur. Any of these, of course, *may* occur. The mounting itself is also, like every aspect of the sexual behavior of these animals, very variable from animal to animal, even within the same species. All we can say by way of generalization is that typically (not always) the female will stand on all fours, sometimes with forelegs bent, sometimes not. She may or may not look back

Downloaded by [Deakin University Library] at 02:01 13 March 2015

at the mounting male; she may or may not vocalize. Kempf (13) describes "kissing" in his animals during the sexual act. I have never seen this in any of my animals. The female does at times turn back to the male and look at him, but their lips never touch.

The male's behavior is very hard to generalize, also because of its extensive variability. The mounting may or may not be preceded by vocalization (which varies in character from species to species), genital inspection (olfactory, gustatory, visual, or manual), or other preliminary behavior. The functional mounting in most species is dorso-ventral, although there is some evidence that in the orang-outan it is normally ventro-ventral [(18) and our own observation]. In dorso-ventral mounting, the male usually grasps the female's hind legs with his feet at the region of her knees, and grasps her sides or pelvic region with his hands. Entrance is made, pelvic strokes ensue, and finally there is ejaculation with accompanying excitement. The male dismounts and becomes quiet; the female is apt to run about excitedly, perhaps vocalizing at the same time. Any semen externally discharged may or may not be eaten by the male or the female or both.

This whole act may be repeated frequently in a short space of time, sometimes being initiated by the male, sometimes by the female. For instance, when a female sooty mangabey in heat was given to a Celebes ape, twelve functional copulations were observed in a period of about a half hour. Ejaculation was positively determined in three of these acts and could not be determined in the others.

Female initiation of the sexual act usually takes the form of presentation, in which she assumes a receptive posture. Her tail is lifted high and her pudenda exposed to the gaze of the male. If the male is not at once responsive, she may back up to him so that her hindquarters are within a few inches of the male's face. She may look back at him and vocalize characteristically. This pose may be held for a fairly long time, e.g., up to thirty seconds. If the male does not respond, she may intersperse repeated presentations with periods of excited running about and vocalization. Sometimes the male is forced to threaten, bite, or beat her if she persists in this behavior, which seems to annoy him when he is not receptive. He may also at times inspect her ano-genital region visually, manually, etc., without any subsequent mounting.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

The male may initiate sexual behavior quite directly by grasping the female, and pulling her into the desired position. In many cases, however, he secures her immediate cooperation by making his desires known to her in other ways, by characteristic vocalizations, tapping her back or sides, manual pressures, etc. These sexual vocalizations vary from species to species, but are uniformly efficacious in inducing presentation immediately in the receptive female.

It will be seen that even functional sexual behavior is characterized by variability rather than by uniformity. When we introduce other factors that make for variability such as dominance mounting and learning or maturation of sexual responses, the picture becomes a varied one indeed. The accounts of the sexual behavior of infra-human primates that are now extant are obviously over-simplified.

2. *Autoerotism.* The occurrence of this behavior has been denied by Hamilton for his animals (9), but there seems to be little doubt that it occurs in a large percentage of isolated animals. It seems to occur more frequently in the male than in the female but it is quite certain that it does occur in the female. It occurs also, to a much lesser degree, in animals in pairs or groups. In six isolated adult males at the Bronx Park Zoo, for instance, this behavior was frequently observed in five of the animals. The other animal was very old. There are no data available for animals in the wild. Yerkes (30) has reported, for his female gorilla, attempted use of the fingers of a man standing outside the cage as a masturbatory agent. Similar behavior was observed by him in a 4–5-year-old female chimpanzee. Autoerotism was observed fairly frequently in our pair of young chimpanzees even when they were together.

3. *Homosexuality.* This behavior is observed very frequently in caged animals of both sexes and all ages. It has been described for Hamadryas baboons in the wild (32). This sexual behavior will be of the dominance type described below rather than of the functional types already described.

4. *Female Mounting.* The female monkey may mount other males as well as females. Her behavior then resembles that of the male in all respects that are anatomically possible. This behavior is also of the dominance type rather than of the functional type.

5. *Ventro-Ventral Sexual Behavior.* This behavior has been seen to occur in animals that normally copulate dorso-ventrally, e.g., the

Downloaded by [Deakin University Library] at 02:01 13 March 2015

pigtail monkey, the macacus rhesus. It has been observed infrequently, occurring sometimes in pairs of females and sometimes in heterosexual pairs. It has been observed only in prepubescent animals, except for two pairs of adult orang-outans, in which animals, however, this may be the "normal" procedure. A possible interpretation of this behavior is submitted below.

6. *Other Forms of Sexual Behavior.* Practically all the so-called human "perversions" may also be observed in these animals, and there seem to be some more besides. The following list is offered with some misgivings about possible misinterpretation. It must be emphasized that they occurred rarely and are not at all typical. They are mentioned only because they will help to drive home the writer's thesis of the tremendous variability of sexual behavior in infra-human primates. He has confined himself only to such forms of behavior as he himself has seen in his animals.

The list of rarer forms of behavior follows: Heterosexual fellatio, auto-fellatio, exhibitionism, homosexual fellatio, coprophagy, necrophilia, bestiality (sexual behavior with dogs, cats, etc.), and the use of the very young animal as a sexual object.[4] These animals frequently show a specific interest in both male and female genitalia regardless of their own sexual gender. Manual, visual, olfactory, and gustatory exploration of the male organ occurs fairly frequently. Some animals have shown a great curiosity in the sexual act of other animals. Their curiosity may become so great that they may interfere with the act itself. We have already mentioned homosexuality in the male and in the female which is very common, autoerotism, eating of semen, and female mounting. We shall discuss below the infra-human primate equivalents of sadism and masochism, which are also very common.

7. *Individual Development of Sexual Behavior.* There is little doubt now that the sexual act in monkeys and apes develops into a smooth, efficient, well-integrated performance usually through a long series of fumbling approximations and adjustments that look remarkably like trial-and-error learning [see also Bingham (2)]. It is fairly certain that some segments of the final integrated act appear spontaneously at an early age and without evidence of learning. It

[4] These names are properly used for humans only. They are used here as analogies.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

is probable that the adult animal who has had no sexual experience may go through the same process of trial and error fumbling that may be observed in the young animal (17). It is also certain that in an interspecies pairing, sexual adjustments are made which are certainly learned. For instance, in a pair in which a pigtail monkey was dominant and a rhesus monkey subordinate, the rhesus quickly learned the characteristic pigtail sexual vocalization and responded to it efficiently, in spite of the fact that he had not so responded at their first meeting.

Experiments similar to those which Stone has made with the white rat are necessary before the question can be answered in any satisfactory fashion, although it is already quite certain that the monkey's sexual performance does not resemble that of the albino rat with respect to sudden maturation.

During the course of this learning or maturation, many abnormal forms of sexual adjustment may be observed. Mounting may be on the head or side. The sitting animal may be mounted. It is only gradually that the ano-genital region is selected out for preferential sexual treatment. Various stages in the development of the mounting response itself may be observed. It may take the form of riding (as a jockey rides a horse) or of various kinds of hugging, or it may be merely a fumbling attempt to stand over the other animal.

Many of these imperfect forms of sexual response are also characteristic of dominance mounting. The latter diagnosis may be made from this behavior when previous, perfect sexual behavior has been observed.

8. *The Loss of Sexual Cyclicity.* Both the male and female may exhibit sexual behavior at any time of the month or year. Copulations may also be observed at any time during the female menstrual cycle. The heat period in the female monkey is simply a period of greater ability and of greater frequency of copulation, as Ball and Hartman (1) have shown, and *not* a period to which all sexual behavior is confined, as in the lower mammal. According to Ball this period comes at about the time of ovulation, midway between two menstrual periods.

It will be pointed out below, however, that the character of sexual behavior probably differs at different parts of the female cycle. Copulation during the heat period is more apt to be of functional type,

Downloaded by [Deakin University Library] at 02:01 13 March 2015

whereas at other times it is more likely to be of the dominance type.[5]

9. *Sexual Behavior as a Channel for Repressed Excitement.* Tinklepaugh (28) has pointed out that, when monkeys are excited by a stimulus with which no direct contact is possible, this excitement may expend itself in a sudden burst of sexual activity [see also Köhler (14)]. Thus zoo animals that are goaded into a rage by animals in the next cage will repeatedly mount their females. Zuckerman (32) has confirmed this observation using the Hamadryas baboon, and our observations on zoo animals are also confirmatory. This behavior seems to be a sort of sublimation in reverse, and seems important with respect to theories of sexuality and emotion. It is interesting to note, however, that at the Primate Laboratory there were two isolated animals who were habitually stimulated to autoerotic activity by the experimenter's coming to the cage.

III. The Dominance Drive as a Motivator to Sexual Behavior

The papers previously published in this series (17, 18) presented considerable evidence to indicate a relationship of some sort between dominance drive and sexual behavior. The tentative conclusion was advanced that there were two different kinds of sexual behavior, that motivated by sexual drive and that motivated by dominance drive. In this section we shall attempt to establish this dichotomy more firmly by a consideration of the experimental evidence now available. This can best be done by discussing (1) the general evidence for the dichotomy, (2) the behavior differences between sexual behavior determined by sexual drive and by dominance drive, (3) the characteristically different constellations of circumstances that call forth dominance sex behavior, (4) the characteristically different constellations of circumstances that call forth subordinate sex behavior, and finally (5) the evidence that disagrees with the proposed dichotomy.

It should be remembered that we are attempting no absolute dichotomy. Its two aspects are merely extremes on a continuous scale.

1. *General Evidence For the Dichotomy.*

a. The correlation between dominance status and sexual rôle. In an experimental determination (18) of the behavior syndromes

[5] This is merely the writer's impression from observation. He has no experimental endocrinological substantiation for this statement.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

characteristic of dominance and subordinate status, it was found, after suitable corrections had been made, that the dominant animal in a pair did 98 per cent of the mounting in the pair (an average of ten dominant animals). Since this correlation was independent of sexual gender, that is, it held true whether the dominant animal was male or female, it is possible to say that dominance rôle is correlated with "male" sexual behavior, and that subordinate rôle is correlated with "female" sexual behavior. This correlation, which is independent of the correlation between sexual hormones and sexual behavior, indicates certainly a form of motivation to sexual behavior that is relatively independent of the specific motivating power of male or female sexual hormones. This second motivation we have called the dominance drive.

b. Freedom of sexual behavior from cyclicity. Sexual behavior in the infra-human primate is not confined to a heat period. Since the female sexual hormones do follow, in their incidence and function, an anatomical and physiological cycle, it would seem reasonable to hypothesize another factor to account for the discrepancy between non-cyclicity of sexual behavior and cyclicity of sexual hormones. Zuckerman (32) has attempted an endocrinological explanation of this discrepancy by assuming that, since the sexual hormone oestrin is the only known cause of sexual behavior, and that, since sexual behavior does occur in the luteal period, therefore oestrin must exert a continuing effect even during the luteal period. This theory is based upon the assumption that sexual behavior is motivated only in a hormonal fashion, an assumption that we hope to prove unnecessary. Practically all the evidence presented in this paper constitutes a refutation of Zuckerman's theory, but we shall consider it more specifically below.

c. The separability of the influence of the sexual hormones. There are some data, however inadequate, that bear on this point in a direct way. Ball's paper (1), previously referred to, indicates a definite increase in sexual excitability in the female macaque at about the time of ovulation. Our own observations indicate also that the behavior of the female is qualitatively different in various ways when she is in (relative) heat. We have observed several cases of reversal of dominance from a dominant female to a previously subordinate male, when this female came into physiological heat. Copulations at

Downloaded by [Deakin University Library] at 02:01 13 March 2015

such a time are of the functional type rather than of the dominance type. Frequent "full" or physiological presentations are observed in the female at such a time. An inadequate male may, during such a period, call out behavior in the dominant female that is not observed at other times, e.g., bullying-presentation. This is the period when a male may most easily assume dominance status. Differences of social organization within the baboon harem have been described by Zuckerman that seem to depend definitely upon this same factor (32).

From such data as these we may assume the actual as well as logical differentiability of the motivating influence of the sexual hormones and the dominance drive.

d. The correlation of different kinds of dominance with different forms of social and sexual organization in infra-human primates. There is no reason to suppose that different types of hormonal organization exist in the different families of infra-human primates. Any differences in social and sexual organization that could be demonstrated to exist between these families would be logically referable to factors other than hormonal ones. The writer has attempted to correlate these differences with differences in type of dominance drive existing in these families (15). Three types of dominance drive were demonstrated to exist in the three main infra-human groups that have been studied (platyrrhine monkey, catarrhine monkey, and anthropoid). The differences in social and sexual organization that have been demonstrated to exist in the first two of these groups (4, 32), were correlated with the respective type of dominance. Since the data bearing on this hypothesis are very scanty, too much should not be made of this point until further investigations fill in the gaps in the data. Such studies are urgently needed if we are to understand the social behavior of these animals.

e. The use of sexual behavior as a "power weapon." Sexual behavior cannot be interpreted always as a means to erotic satisfaction, especially since some behavior such as mounting by the female is very unlikely to give erotic satisfaction. While the data to be discussed below all bear on this point more specifically, the general statement may be made here that much behavior can be interpreted *only* as behavior attempts to satisfy a dominance drive and not a sexual tension. Sexual behavior is used as an aggressive weapon often, instead of bullying or fighting, and is to a large extent interchangeable with

Downloaded by [Deakin University Library] at 02:01 13 March 2015

these latter power weapons. It may be used to subdue an annoying partner, it may be used to enforce the desires and the will of a dominant animal, and in many other ways that clearly indicate its importance as a power weapon.

2. *Behavior Differences.* The mounting animal in the dominance mount behaves differently from the mounting animal in the functional copulation. While none of these differences are absolute, there are enough of them to make diagnosis fairly simple in many cases. All or any of the elements that we have designated as essential in the functional mount may be missing in the dominance mount, or they may be present in a merely nominal sense. Erection may or may not be present (in the dominant male), entrance may or may not be made, ejaculation is much less likely to occur, pelvic movements may be completely absent, or may be very few in number, and these movements, as well as the whole performance may be of a very lackadaisical character, very different from the excitement and tension of the mounting animal in the functional mount.

Mounting may be imperfect. The only desideratum at times seems to be above the subordinate animal. It makes no difference at times whether this latter animal is sitting, lying on his face, on his back or on his side. The subordinate animal may then be mounted on the head, or side, or any place else. The mounting in fact may be foreshortened down to the point where it is difficult to diagnose its presence for scoring. It may, once begun, stop at any point in the behavior series. Grasping the hind legs of the subordinate animal is more frequently absent than present in mounts of this kind.

Generally signs of sexual excitement, as described above in connection with functional mounting, are more apt to be absent than present. Vocalizations for instance are not very frequently heard in dominance sexual behavior. The mounting animal is very easily distracted by any interesting stimulus. Dominant animals have often been observed to begin grooming while still mounted. Food offered to such an animal will also win out over the sexual activity very frequently.

The subordinate animal, i.e., the one who is mounted, will behave differently from the mounted animal in functional sex behavior. Presentation again may be merely nominal and very often is. This response may vary all the way from a mere flirt of the hindquarters in

Downloaded by [Deakin University Library] at 02:01 13 March 2015

the direction of another animal in passing, to the full functional presentation response of the female in heat. Sexual excitement is almost always absent in the dominance mounting in the mounted as well as in the mounting animal. There may or may not be cooperation with the mounting animal. The following responses have been observed in the subordinate animal in a dominance mounting: fear, apprehension, disinterest, mere complaisance, annoyance, impatience, passivity, cringing, attempts at flight, sitting, moving about, collapsing, somersaulting, fright vocalization, the "fright snarl," waxy flexibility, complete loss of tonus.

In many cases the evidence from behavior indicates that being dominance-mounted is unpleasant. This is especially true for those animals that we have named "strong-dominance" animals, i.e., those animals with very strong drive to dominance, who, however, happen to be subordinate in the particular pairing under consideration because of other factors. In other "weak dominance" animals, however, this may not be true.

3. *The Situations in Which Dominance Sexual Behavior Occurs.* The situations and constellations of circumstances that instigate or are followed by dominance sexual behavior are so numerous that it is necessary to classify them in some way. Accordingly the following classification is offered, though with some misgivings, since it necessarily involves a good deal of anthropomorphism, and also because, to some extent, it begs the question under discussion. It should be understood that it is used merely for the sake of convenience of presentation.

a. When a dominant animal does not get what he wants. If the subordinate animal gets food that the dominant animal wants, if the subordinate animal does not groom the overlord when the latter has presented himself for grooming, if the subordinate animal does not submit to grooming when the dominant animal has attempted to groom him, if the subordinate animal does not at once give up any object desired by the dominant animal, dominance mounting by the dominant animal is very likely to occur. A dominant female, when she has come into heat, will present to her partner for mounting. If he is afraid to do so, or is inadequate in any way, the dominant female tends to mount the subordinate animal so offending.

b. To end a situation not liked by the dominant animal. If the

Downloaded by [Deakin University Library] at 02:01 13 March 2015

subordinate animal makes too much noise, is too active, plays too boisterously, or in any other way becomes a nuisance, it is likely that the dominant animal will mount him in an effort, usually successful, to subdue him. One animal that wriggled about a good deal while being groomed by the dominant animal was mounted frequently by the latter when such behavior occurred. The subordinate animal would then become more tractable. When the subordinate animal makes any attempt to mount the dominant animal, or if he even makes a gesture to do so, it is extremely probable that the dominant animal will mount him.

c. When a situation, desirable to the dominant animal, ends. If the dominant animal is being groomed and likes it, or if he is grooming and likes it (as evidenced by his behavior), and the subordinate animal ends the situation by running away, he is likely to be mounted by the dominant animal.

d. When there is any challenge to the dominance of the overlord. Under this somewhat doubtful heading may be grouped such situations as the following: genital inspection of the dominant by the subordinate animal; too great boldness in the subordinate animal in attempting to get food; an attempt by the subordinate animal to mount the dominant animal; boldness in returning the "dominance stare" of the overlord; too great a display of attempted dominance in the subordinate animal; eating of food even after the dominant animal has spurned it. Any of these situations are liable to eventuate in mounting by the dominant animal. Mounting may also be used by the dominant animal to intimidate his partner in advance of food getting, i.e., when the food signal is given experimentally. In our experiment, in which food was dropped automatically into the experimental cage through a chute, if the subordinate animal merely looked into this chute opening, even when no food was there, he was liable to be mounted by the dominant animal.

In this same experiment, food was introduced into the situation only beginning with the sixth experimental period. In many cases, this first introduction of food increased the number of dominance mountings. In a few cases, no dominance mountings occurred *until* this period.

Under this heading may be mentioned also the fact that more mountings occur in the first meetings of a pair of animals, and also

Downloaded by [Deakin University Library] at 02:01 13 March 2015

that there seem to be more mountings in the first few minutes of such a meeting than there are in the last few minutes. This phenomenon may *possibly* be interpreted as due to the fact that dominance is established early and this is one way in which it is done. There are, of course, other possible interpretations of this behavior.

e. When dominance is openly conceded (in some cases). This may seem to contradict the previous classification (of challenge to dominance). However this may be, the fact, nevertheless, remains that such behavior does occur. In explanation of this apparent paradox, we can point to the general fact of bipolarity or ambivalence of behavior in everything that has to do with the dominance drive, and second, to the more obvious fact of extremely wide individual differences in strength of dominance drive, and consequently, in character of behavior. Thus, in some overlords, dominance behavior is stimulated by opposition or challenge; in others, it is stimulated by lack of challenge, or too ready subordination. In such animals, dominance sex behavior may be called out by flight of the subordinate animal, or by cowering, cringing, "fear-chattering," etc. (Although in other cases, this same behavior may ward off overt dominance behavior in the overlord.) Subordinate presentation may call out dominance mounting, or, in other animals, it may ward it off, since by presentation dominance is conceded.

f. In any situation in which bullying or attack or fighting might have occurred. The behavior syndrome of dominance is at the same time a unity and made up of interchangeable parts. The above classification of situations that call forth dominance sex behavior might be made to serve equally well for a canvassing of the situations that would call forth bullying, simply by substituting the word "bully" for "mount." The contrary proposition may be stated thus: any situation that is adequate to call forth bullying behavior is also as adequate and as likely to call forth dominance sex behavior.

g. Dominance sex behavior in the subordinate animal. The dominance drive is not cyclic but continuous. The data indicate that it is best to think of it in the subordinate animal as continuously active, and always trying[6] to express itself in dominance behavior even when in the subordinate status. Thus, whenever there is any possi-

[6] Such anthropomorphic expressions are used here only because of space limitations.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

bility of doing so, the subordinate animal will behave in a dominant fashion. The following instances of such behavior have been recorded during the writer's experiments.

In inter-species pairings, it has been possible to determine that one or the other animal was dominant. The behavior syndrome has often not been as perfectly intercorrelated as in like-species pairings. For instance, in pairing a green monkey, which was a very fast but timid animal, with a macacus rhesus, which was a comparatively slow but dominant animal, it was found that the macaque was dominant in all behavior but food getting. The green monkey was so speedy that he could get the food far more easily than his partner as it dropped from the food chute. The continual efforts of the macaque to enforce his dominance (sexually and otherwise) were futile because it was possible for the green monkey to avoid his rushes very easily.

Any weakness in a dominant animal is immediately seized on and exploited in the dominance struggle. A dominant macaque that had somehow sprained his ankle was soon flouted by the subordinate animal whom he had dominated completely previously. Among macaques, a sick animal is often beaten or bullied to death, even though it may have been dominant before.

The strong desire of a dominant animal to groom or to be groomed may be thus played upon by the subordinate animal to satisfy at least partially his own dominance drive. Several dominant animals, who were strong groomees (liked to be groomed), were regularly mounted by the subordinate animal, upon presentation for grooming. The dominant animal would often allow this mounting for a moment or two, if it were followed by the strongly desired grooming.

4. *The Situations in Which Subordinate Sex Behavior Occurs.* The dominant animal will present (assume the female sexual position which is also usually the subordinate sexual position) in the following situations: a dominant female will present when in heat; a dominant animal will present to get what it wants, e.g., grooming, when mounting or bullying are of no avail; to attract or lure the subordinate animal so that he may be bullied or mounted; in play (see the first paper in this series). The dominant female may behave in a way that we have called "presentation-bullying." She will present to the subordinate animal and at the same time bully him with her hind legs. Sometimes in this position she may back up closer and

Downloaded by [Deakin University Library] at 02:01 13 March 2015

closer to him until finally she passes right over him into a mounting position. The dominant animal may also present in a fashion that can only be called teasing. He may present and allow the subordinate animal to approach and almost mount, only to turn on him (not viciously, however) and snarl or growl or bully him. This may be repeated several times, but usually the subordinate animal does not repeat the performance after one or two attempts.

The subordinate animal may present in the following situations: after getting food; if the dominant animal is annoyed or shows any resentment or anger; upon aggressive approach of the dominant animals; after, before, or during bullying or attack; to keep food already obtained if the dominant animal approaches; on genital inspection by the dominant animal; upon approaching the dominant animal to sit near him or to groom him; when the dominant animal indicates his desire to mount; when the subordinate animal has been too bold; when the dominant animal stares at him in a specific way which the writer has called the "dominance stare"; during the very first moments of the first meeting with an animal who turns out to be dominant.

Any animal may present to a strange, or unknown, or fear-inducing stimulus. This may at times be interpreted as a question of propitiation or subordination, and at other times as a gesture of friendliness. For instance, a young mandrill, seeing a lighted match for the first time, touched it and was burnt. Immediately he presented "fully." An overlord, who had bullied his partner into a state of terror, now wanted to be groomed. Whenever he approached his subordinate, however, the latter curled up and cringed instead of grooming, whereupon the overlord presented to him. This seemed to be reassuring and an indication that no further violence was intended, and the subordinate at once started grooming.

5. *Contrary Evidence.* Some evidence may be marshalled against the dichotomy here proposed. While the writer feels that the negative evidence is far outweighed by the positive evidence, he also feels that the reader had best decide this for himself. The following facts throw some doubt on the validity of the distinction and must be explained away in any final statement of the problem.

There is some evidence that true sexual excitement is at times involved in the dominance sex relationship. Dominance mountings, in

Downloaded by [Deakin University Library] at 02:01 13 March 2015

a few instances, have been observed to be stimulated by the heard sex grunts of copulating animals in a neighboring cage or room. Also autoerotism seems to decrease in a dominant animal who has engaged only in dominance mountings during the experiment. Again, it should be pointed out that while any or all the essential elements of the functional sex behavior *may* be absent in the dominance mounting (and most often are), these same elements are often present in the dominance mounting to a large extent, although rarely as completely as in functional mounting. Thus sex vocalizations may be present in some dominance mountings. Erection is fairly frequently observed in the mounting male (and peculiarly enough, in the mounted male as well).

The sexual value of the subordinate sexual position is a very puzzling matter. The evidence bearing on the question is vague and contradictory. For instance, in addition to the note above on erection in the mounted male, we might mention also the case of a subordinate macaque male, who practically always masturbated while being mounted by the dominant animal. The fact also that dominant males or females may mount the subordinate male or female after accidental glimpses of the genitalia of this latter animal indicates a possible specific attraction value of these organs, in which, however, no distinction is made between male and female genitalia.

It should also be mentioned that a few dominance mountings, which were diagnosed as such because of the stimulating situation, behavioristically looked almost like true functional mounts, so that, if observed alone without knowledge of the situation, they might have been diagnosed as functional rather than dominance mounts. It has looked sometimes, in cases like this, as if the original motivation was dominance, with the performance changing in character as it was found to be erotically pleasant. Thus the dichotomy is very far from being a sharp one.

Another fact that should be emphasized again is that what we have done was to point out the two extremes of a continuous scale of behavior. A distinction between dominance sex behavior and hormone sex behavior would never have been noticed or made, if the middle ranges of the scale of behavior alone had been observed. It was only through observation of the extremes of the scale of behavior that the

Downloaded by [Deakin University Library] at 02:01 13 March 2015

distinction was noticed and carried over to the middle, more doubtful cases of sexual behavior.

So far as reproduction is concerned, also, there is probably little doubt that what I have called a dominance mount *might* eventuate in impregnation and production of offspring in adult animals. The descriptive term "functional mount" must remain a relative one.

6. *Summary.* With the preceding considerations the writer has attempted to convey what is much better and more convincingly driven home by a few hours' observation of the behavior of these animals under the proper conditions. That a simple explanation of their sexual behavior in terms of sexual drive alone is completely inadequate is, we think, an established fact. When we add to this drive the motivating influence of the dominant drive, we have a much more valid explanation of the characteristic sexual behavior of the infra-human primate. This "two-drive theory" may eventually be turned into a three- or four-drive theory, or the dominance drive itself may be explained on an endocrinological basis.[7] However that may be, on the basis of the evidence now in hand, we must allow for a more complex motivation of sexual behavior in the monkey than the science of endocrinology has hitherto thought necessary.

IV. Some Implications of a Two-Drive Theory

1. *Freedom from Sexual Cyclicity.* We have already mentioned the fact that the sexual behavior of the monkey is not confined to a heat period but may occur at any time of the year, month, or during any period of the female menstrual cycle. The tendency thus far has been to explain this anomaly in endocrinological terms. Heape, for instance (11), labels it "abnormal oestrous behavior." Zuckerman (32) has made a more systematic attempt to explain this behavior in terms of a continuing effect of the oestrin hormone through the luteal period.

We shall make no attempt to criticize this theory on an endocrinological basis except to point out the lack of evidence (even

[7]For instance, there is some indication now that both men and women produce both the male and female sexual hormone. It is at least conceivable that the behavior we have described may eventually be considered to be a function of the variable interplay and balance of these two hormones in the same organism.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

endocrinological) to support it. The scanty data adduced by Zuckerman in its support are suggestive but by no means conclusive or even convincing. We shall instead confine our efforts to demonstrating our alternative theory and pointing out the various ways in which it fits the behavior data in an explanatory way.

We submit that a consideration of the dominance drive as a motivator to sexual behavior, when added to the sexual drive, is adequate to explain this freedom from cyclicity. If it were possible to disentangle the sexual effects of the dominance drive from the sexual effects of the sexual drive, we should probably find that the sexual drive in the female follows roughly such a cycle as we find in the lower mammals. The rough facts of this cycle are now known on the anatomical side. Ovulation comes approximately at the midway point between the beginnings of two menstrual periods. During the period before ovulation, the oestrin hormone[8] is the most potent endocrine determiner of behavior; during the period after ovulation, the corpus luteum hormone[8] is the most potent determiner of behavior. The influence of the oestrin hormone seems to rise to a peak a day or two before ovulation. Ball and Hartman (1) found this to be true for sexual excitability in the adult female *macacus rhesus,* although some animals showed no difference of behavior throughout the cycle. At this time the copulations that occur seem much more likely to be functional in nature, and they seem to occur more frequently.

If we take this physiological rhythm as fundamental, we find superimposed upon it all the sex behavior determined by dominance. As we have shown, sexual behavior may be independent of sexual excitability or desire. Since dominance drive is not cyclic but continuous, we have sexual behavior occurring at any time during the cycle.

Stated briefly then, this hypothesis holds that the freeing of monkey sexual behavior from cyclicity is due largely to the superimposing of socially motivated sexual behavior upon the hormonal cycle. The pattern of hormone-determined behavior is fundamental and takes precedence over dominance-determined sexual behavior, especially in the period just before ovulation, and probably also in

[8]Or hormones.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

the longer "oestrin period" before this. But when these prepotent physiological factors are not operating or are at a low ebb, then we have clearly coming into prominence another kind of motivation and another kind of sexual behavior. It is the resultant of these two types of motivation that gives us the sexual behavior picture that we actually observe in these animals. This does not mean that the two types of motivation are distinct in their effects, nor that the two kinds of sexual behavior are easily distinguished. It is highly probable that many individual sexual acts are the resultant of both drives, and that these two drives generally intermingle and join to produce a common effect.

This theory will also explain satisfactorily the frequent appearance of homosexual behavior, prostitution behavior, and many other kinds of behavior that the endocrinological theory cannot at the moment deal with.

One other fact is very important in this connection. To say that sexual behavior occurs in monkeys at any time is inaccurate. In some pairs it may *never* occur, as so many authors have reported.[9] If the female is dominant to the male it may never occur except in the form of dominance mounting *by the female only*. In other cases, when a female is not too markedly dominant over the male she is with, she will present to him and functional copulation will ensue only when she is in heat, and at no other time. Such behavior patterns as these cannot be explained endocrinologically.

2. *"Prostitution Behavior" in Monkeys.* What has been called "prostitution behavior" in monkeys may be understood in a broader frame of reference in the light of the previous considerations. Economic goods that are ordinarily unavailable to a subordinate animal become at least partially available to him when he concedes dominance by assuming the female sexual position. We must understand that he is ordinarily cut off from access to these economic goods because he does not dare challenge the dominance of the overlord by avail-

[9] "Some females have, however, consistently refused the male, and certain ones have an antagonism to one or the other of our males but the stage of the menstrual cycle has nothing to do with their refusal or acceptance" Hartman (10). Many such quotations are available in many other studies. Just as frequently do we meet with interpretations in terms of "antagonism."

Downloaded by [Deakin University Library] at 02:01 13 March 2015

ing himself of them. Obtaining a piece of food apparently has two meanings for monkeys: (1) it is a source of hunger appeasement and (2) it is also an assertion of dominance. If the subordinate animal can assure the dominant overlord that he means no challenge to dominance, then the overlord, if he is not hungry, may allow him to get the food. The method par excellence of showing subordinate status seems to be an assumption of the female sexual position (presentation). To interpret such behavior as an economic transaction in which sexual satisfaction is offered in exchange for economic goods, *quid pro quo,* seems to be an unsatisfactory interpretation. The presenting monkey is offering not sexual satisfaction but social submission.

3. *Homosexual Behavior.* This behavior is easily explained as dominance and subordination behavior. An animal will mount another animal of the same sex to assert dominance; and an animal will present to another animal of the same sex to admit subordination. To interpret such behavior as an abberation of the sexual drive or as an endocrinological abnormality is to go far astray. To the human observer the fact that the animals behaving sexually are of the same sexual gender seems very important and he gives it the special name of "homosexual" behavior. Actually this is an artificial, man-made abstraction from a large mass of homogeneous behavior, namely, dominance mounting. It is important and significant only to the human, and not to the monkey, that a male overlord mounts a subordinate male rather than a female. This means no more and no less than dominance-mounting a subordinate female.

4. *The Unmounted Female, and Other Non-Reproductive Phenomena.* Cases in which a female is never mounted by the males in her group, or in which the female mounts males or other females instead of being herself mounted, or in which a male will mount other males in preference to females, are probably all explicable in the same terms that we have used above. The female who is dominant to all the males in the group will not be mounted by any of them except when she comes into heat, and possibly not even then, if she is *very* dominant, for they will fear her even when she presents. The animal who is mounted by the overlord for the assertion of dominance may be either male or female. However, it will not be mounted *because* of its male- or femaleness; it will be mounted be-

Downloaded by [Deakin University Library] at 02:01 13 March 2015

cause of the strength of its own dominance drive, which is independent of its sexual gender.

On the surface, then, it might seem as if the dominance drive, because of its peculiar workings, was non-biological, in the sense that it had negative survival value for the race or species. Closer examination of the facts will convince us that this is not true, however. In the first place the fact of sexual dimorphism insures generally the dominance of the male over the female in the wild. In our experiments this factor of sexual dimorphism was deliberately controlled by matching for size and also by choosing animals of like sex for pairing. The fact is, then, that the usual male superiority in size and strength is not without survival value. It insures for these animals in the wild a fitting of the dominance drive and its manifestations into the general picture of survival of the species. It indicates also a very important social value for this fundamental anatomical fact.

In the second place there is some indication that a dominant female coming into heat loses her dominance and assumes the ordinary "female" rôle in sexual behavior. This fact (if it be found to be a fact) is also shown thus to be of survival value.

In this connection it is interesting to consider the difference between the infra-human primate and, say, the guinea-pig or the white rat. This latter animal has been shown by Stone (26) to display specific maturation of the sex-drive and also of sexual behavior. A young male, without any sexual experience whatsoever, will show an astonishing perfection and adequacy of behavior the first time he mates with a female. What in the monkey takes the place of this perfection of maturation in which learning need play no part? What takes the place of specific stimuli to sexual behavior? So far as is known there are none that are nearly as definite as those we find in the lower animals. The writer suspects that this question has at least some light thrown upon it by the preceding considerations.

5. *Sadism-Masochism.* Sadistic behavior seems to be dominance behavior and masochistic behavior seems to be subordination behavior. It is to be doubted that these behavior types are direct manifestations of the sexual drive as has hitherto been thought, although it is very easy to understand just why this mistake should have been made. Sadism and masochism are very definitely con-

Downloaded by [Deakin University Library] at 02:01 13 March 2015

nected with sexual behavior, but it is our conviction that this connection is with sexual behavior of the dominance type, and that they are alike manisfestations of something deeper, the dominance drive in its two aspects of dominance behavior and subordination behavior.

6. *Jealousy.* Oftentimes we see behavior in the infra-human primate that can be described only as jealous behavior. The interpretation of such behavior in terms of outraged dominance, challenge or affront to dominance, etc., is at least a possible one even if it is also a very risky one. We wish at this point merely to suggest that this question may be elucidated by further research with the dominance drive.

7. *The Divorcing of Sexual Behavior from Reproduction.* To this day, many psychologists speak of sexual and reproductive behavior as if they were synonymous. The absurdity of such a contention has been amply demonstrated by the facts presented in this paper. While sexual behavior *may* be reproductive it is not necessarily so, and as often as not, actually is non-functional or non-reproductive.

8. *Ventro-Ventral Sex Behavior.* We are inclined, on the basis of the inconclusive evidence that we have, to interpret this behavior as the means whereby an animal with strong dominance drive, who has been *forced* into a subordinate position, may avoid the (for him) obnoxious subordinate sexual position. We suspect that it may also mean equality of dominance.

This behavior, with one exception, occurred only 'n pairs in which the subordinate animals had a strong drive to dominance. In our zoo observations (17), this behavior occurred in two groups. In group nine, the young male mandrill who was subordinate to the female, nevertheless was a very aggressive animal and seemed to have a strong drive to dominance. Ventro-ventral sex adjustments were observed twice in this pair. The same behavior was observed in a group of pigtail monkeys (group 5), under the same circumstances. It was never seen to occur in monkey groups in which the overlord was completely dominant.

In the laboratory experiments (18), this behavior, with one exception, again occurred only in pairs in which the subordinate animal had strong drive to dominance (Pal-Psyche, Jill-Jack, Spitter-

Downloaded by [Deakin University Library] at 02:01 13 March 2015

Glenny, and Roughie-Toughie). These pairs were the only ones in which the subordinate animals were "strong-dominance" animals. The one exception to this tentative rule was observed in the Psyche-Percy pairing, in which Psyche, the dominant animal, initiated this behavior three times. Since he had previously been paired with Pal (in which pairing there was much struggle for dominance), this exception may perhaps be interpreted as a habit carry-over. Certainly it is significant that when he was paired with Pal, Psyche initiated this behavior 118 times in 25 periods, whereas when he was paired with Percy, a completely subordinate animal, this behavior occurred only three times in 30 periods.

In a more recent experiment, not yet reported (19), in which 12 pairings were made, this behavior occurred only once, and here too in a pairing in which the subordinated animal displayed an extremely strong urge to dominance.

The status of this behavior in apes seems to be somewhat different and it is doubtful that the above interpretation would hold for them. It has been observed in the gorilla (29, 30), the chimpanzee (29), and in the orang (8). Our pair of chimpanzees at the zoo (17) also at times exhibited this behavior. The male, who was dominant, lay on his back and invited the subordinate female to come to him by spreading his arms and legs wide. She usually responded by coming rapidly and lying on him. The keeper of the zoo reported the same behavior for a pair of orang-outans which had died before our experiments began. The female, who was dominant, invited the subordinate male to sexual activity in the same way. In these orangs and in those reported by Fox (8), this was the only form of sexual behavior observed and it may be the "normal" way for these animals. In our pair of chimpanzees and in those recorded in the literature, this behavior was interspersed with ordinary dorso-ventral mounting by the dominant animal.

The door is wide open to guesses as to the interpretation of this behavior in the apes. Our own guess would be that this behavior has something to do with the different kind of dominance drive observed in the anthropoid apes. It would seem to us to go along in some way with their greater friendliness and mutuality of behavior. Obviously, however, more data are needed before more valid hypotheses may be made.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

IV. Summary

A brief description of the sexual behavior of infra-human primates emphasized the profusion of sexual behavior, both in amount and variability.

Various considerations were then discussed that made it seem valid to consider the dominance drive as a motivator to sexual behavior. If this is admitted to be true, then all sexual behavior may roughly be divided into two types, that motivated mainly by the sexual drive, and that motivated mainly by the dominance drive. The latter type may be used as a power weapon, and as a form of gesture language with which social attitudes are communicated.

Various baffling problems of social and sexual behavior in these animals may be cleared up, at least partially, by an application of this "two-drive" theory. The problems discussed were (1) freedom from sexual cyclicity in the infra-human primate, (2) the so-called "prostitution behavior" of these animals, (3) homosexual behavior, (4) the unmounted female, and other similar non-reproductive phenomena, (5) sadism-masochism behavior, (6) jealousy, (7) the general problem of the separability of sexual behavior from reproductive behavior, and (8) ventro-ventral sexual behavior.

Nothing has been said in the body of the paper concerning the human (advisedly). It is, however, very obvious that the techniques of experimentation and theoretical application discussed for the infra-human primate strongly suggest reconsideration of similar human behavior in their light. For instance much that has been said here could be profitably compared with similar data and conclusions drawn by Adler and his school for the human. We call particular attention to the close similarity between our concept of dominance drive and the Adlerian concept of "masculine protest."

References

1. Ball, J., & Hartman, C. G. Sexual excitability as related to the menstrual cycle in the monkey. *Amer. J. Obstet. & Gynecol.*, 1935, **29**, 117-119.
2. Bingham, H. C. Sex development in apes. *Comp. Psychol. Monog.*, 1928, **5**. Pp. 166.
3. Carpenter, C. R. Psychobiological studies of social behavior in aves. I. The effect of complete and incomplete gonadectomy on the pri-

Downloaded by [Deakin University Library] at 02:01 13 March 2015

mary sexual activity of the male pigeon. *J. Comp. Psychol.*, 1933, **16**, 25-57.

4. ————. A field study of the behavior and social relations of howling monkeys. *Comp. Psychol. Monog.*, 1934, **10**. Pp. 168.
5. COOLIDGE, H. J., JR. Notes on a family of breeding gibbons. *Human Biol.*, 1933, **5**, 288-294.
6. FOLEY, J. P., JR. First year development of a rhesus monkey reared in isolation. *J. Genet. Psychol.*, 1934, **45**, 39-105.
7. ————. Second year development of a rhesus monkey reared in isolation during the first eighteen months. *J. Genet. Psychol.*, 1935, **47**, 73-97.
8. FOX, S. The birth of two anthropoid apes. *J. Mammal.*, 1929, **10**, 37-51.
9. HAMILTON, G. V. Sexual tendencies of monkeys and baboons. *J. Anim. Behav.*, 1914, **4**, 295-318.
10. HARTMAN, C. The period of gestation in the monkey, *Macacus rhesus*, first description of parturition in monkeys, size and behavior of the young. *J. Mammal.*, 1928, **9**, 181-194.
11. HEAPE, W. The "sexual season" of mammals and the relation of the pro-oestrum to menstruation. *Quar. J. Micros. Sci.*, 1900, **44**, 1-70.
12. JACOBSEN, C. F., JACOBSEN, M. M., & YOSHIOKA, J. G. Development of an infant chimpanzee during her first year. *Comp. Psychol. Monog.*, 1932, **9**, 1-94.
13. KEMPF, E. J. The social and sexual behavior of the infra-human primates with some comparable facts in human behavior. *Psychoanal. Rev.*, 1917, **4**, 127-154.
14. KÖHLER, W. The mentality of apes. (Trans. by E. Winter from 2nd rev. German ed.) New York: Harcourt, Brace, 1925. Pp. viii+342.
15. MASLOW, A. H. The dominance drive as a determiner of social behavior in infra-human primates (abstract). *Psychol. Bull.*, 1935, **29**, 117-118.
16. ————. Individual psychology and the social behavior of animals. *Int. J. Individ. Psychol.*, 1935, **1**, 4th Quarter, 47-59.
17. ————. The rôle of dominance in the social and sexual behavior of infra-human primates: I. Observations at Vilas Park Zoo. *J. Genet. Psychol.*, 1936, **48**, 261-277.
18. ————. The rôle of dominance in the social and sexual behavior of infra-human primates: IV. The determination of hierarchy in pairs and in a group. *J. Genet. Psychol.*, 1936 (in press).
19. MASLOW, A. H., & FLANZBAUM, S. The rôle of dominance in the social and sexual behavior of infra-human primates: II. The experimental determination of the dominance behavior syndrome. *J. Genet Psychol.*, 1936, **48**, 278-309.
20. MILLER, G. S., JR. Some elements of sexual behavior in primates and their possible influence on the beginnings of human social development. *J. Mammal.*, 1928, **9**, 273-293.
21. ————. The primate basis of human sexual behavior. *Quar. Rev. Biol.*, 1931, **6**, 379-410.

Downloaded by [Deakin University Library] at 02:01 13 March 2015

22. MONTANÉ, L. Un chimpancé Cubano. *El Siglo,* 1915, **20**, 717. [Referred to by Yerkes (31)].

23. ————. Histoire d'une famille de Chimpanzés. Paris, 1928. [Referred to by Yerkes (31)].

24. PASSEMARD, E. Quelques observations sur des chimpanzés. *J. Psychol. norm. et path.,* 1927, **24**, 243-253.

25. SOKOLOWSKY, A. The sexual life of the anthropoid apes. *Urol. & Cutan. Rev.,* 1923, **27**, 612-615.

26. STONE, C. P. The congenital sexual behavior of the young male albino rat. *J. Comp. Psychol.,* 1922, **2**, 95-153.

27. ————. The initial copulatory responses of female rats reared in isolation from the age of twenty days to the age of puberty. *J. Comp. Psychol.,* 1926, **6**, 73-83.

28. TINKLEPAUGH, O. L. Sex behavior in infra-human primates as a substitute response following emotional disturbance (abstract). *Psychol. Bull.,* 1932, **29**, 666.

29. YERKES, R. M. The mind of a gorilla. Part II. Mental development. *Genet. Psychol. Monog.,* 1927, **2**. Pp. 193.

30. ————. The mind of a gorilla. Part III. Memory. *Comp. Psychol. Monog.,* 1928, **5**. Pp. 92.

31. YERKES, R. M., & YERKES, A. W. The great apes. New Haven: Yale Univ. Press, 1929. Pp. xix+652.

32. ZUCKERMAN, S. The social life of monkeys and apes. New York: Harcourt, Brace, 1932. Pp. 357.

Teachers College, Columbia University
New York City, New York

Downloaded by [Deakin University Library] at 02:01 13 March 2015